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ThinkTWENTY20

The Magazine for Financial Professionals

Mental Health and the Accounting Profession – Insights and Interventions from recent Canadian Research

A Step into the Future of the Profession - Competency Map 2

Sustainability Assurance Services – Hot Market or Tough Sell?

Blockchain and Accounting Information Systems

Web 3.0: The Future of the World Wide Web, “Blockchain for Everything, Everywhere” or Blue Smoke and Mirrors?

Number 12, Spring 2022

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Gerald Trites, FCPA, FCA, CISA
Editor-in-Chief

Editorial

With this issue, we celebrate our third year as a publication. A milestone! It is also the first issue of a new era for *ThinkTWENTY20*. Up to now, we have given the magazine for free. Now, we are charging for the issues or subscriptions – whichever our readers select. This will enable us to enhance the magazine and also pay for additional writing and other services, opening up exciting new possibilities. Our website, of course, continues to offer a great deal of excellent content for free.

A major feature of this issue is an article setting out the preliminary conclusions from a large and very important research study on mental health among Canadian accountants carried out on a collaborative basis by several Canadian universities. In addition, it includes a detailed exploration of the challenges around providing attestation on sustainability disclosures – an area that is becoming increasingly important, given the incredibly rapid growth in the importance of ESG disclosures to investors. Also, this issue includes an interview about the new competency map released by CPA Canada, which – with its principles-based approach – is a departure from the past. We interviewed Tim Jackson, the chair of the formulating committee, who provided excellent insight into the committee's thinking and conclusions.

Other insightful articles include one by Eric Cohen on Web 3 and one by Skip White on Blockchain and Accounting Information Systems.

We will continue to seek out interviews with our leading thinkers and articles that delve deeply into the issues that we all face in this very fast-changing world. We hope you join us in this journey.

Mental Health and the Accounting Profession – Insights and Interventions from Recent Canadian Research

By Merridee Bujaki, Ph.D., FCPA, FCA, Darlene Himick, Ph.D., CFA, LLB, and Suzanne Paquette, Ph.D., CPA, CA

In Spring 2021, *ThinkTwenty20* published an issue focused on mental health among accounting professionals. We contributed an article to that collection summarizing academic research and recent professional initiatives addressing mental health. Issues of mental health in the workplace have received increasing attention as the pandemic has exacerbated factors known to lead to stress, anxiety and burnout. Working women, especially those with care responsibilities, have been acknowledged to have found the pandemic particularly challenging,[1] causing many of them to rethink their relationship with work.[2]

Merridee Bujaki, Ph.D., FCPA, FCA, is a Full Professor of Accounting at the Sprott School of Business, Carleton University. Her research addresses disclosures in corporate annual reports, the accounting history of the Rideau Canal, and accounting careers in Canada, including diversity in accounting firm recruitment documents, women in the profession and, as a member of the Healthy Professional Worker Project, the mental health experiences of professional accountants.

Darlene Himick, Ph.D., CFA, LLB, is an Associate Professor of Accounting at the Telfer School of Management, University of Ottawa. She conducts research on a variety of accounting topics such as accounting and finance ethics, the accounting profession and the use of experts in standard setting. She is currently involved with the Healthy Professional Worker Project, investigating the mental health issues that accountants face in their many roles.

Suzanne Paquette, Ph.D., CPA, CA, is a Full Professor at the School of Accounting of the Faculty of Business Administration at Université Laval. Suzanne is a research member of The Healthy Professional Worker Partnership. Her other areas of interest include the role of taxation in financial planning for retirement, ethics and tax practitioners, audit committee financial expertise and the provision of non-audit tax services, and the economic effects of tax policies.

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[1] Zoch, G., Bachmann, A., & Vicari, B. (2021). "Reduced well-being during the COVID-19 pandemic – the role of working conditions." *Gender, Work & Organization*, 1 – 22. https://doi.org/10.1111/gwao.12777 ; Ghio, A., and Moulang, C. (2021). "Women accountants and psychological resources." Working paper.; Ghio, A., Moulang, C., & Gendron, Y. (2021). "Always feeling behind: Women auditors' experiences during COVID-19." Working paper.

[2] Barnes, B., Cussatt, M., Dalton, D. and Harp, N. (2021). *Declining Partner Aspirations During the COVID-19 Pandemic: A Contemporary Analysis of Work-Family Conflict in the Accounting Profession* (December 21, 2021). Available at SSRN: https://ssrn.com/abstract=3991248 or http://dx.doi.org/10.2139/ssrn.3991248

We are pleased to return to *ThinkTwenty20* in Spring 2022 to be able to report preliminary results from research on the mental health of professional accountants in Canada, both preceding and during the COVID-19 pandemic. In this article, we provide a brief overview of the research project, offer some preliminary results from our survey of more than 300 Canadian professional accountants, and describe preliminary insights arising from our in-depth interviews with more than 30 professional accountants. We have also compiled participants' suggestions for interventions that they believe may help to mitigate the stresses and mental health challenges they face in their work as professional accountants.

Healthy Professional Worker Research Partnership and Design

Our research is one aspect of wider study of mental health among Canadian professionals, the Healthy Professional Worker project.[3] The project's objective is to examine the gendered nature of mental health issues, leaves of absence and return to work experiences of professional workers. Funded jointly by the Social Sciences & Humanities Research Council (SSHRC) and the Canadian Institutes of Health Research (CIHR), both agencies of the Canadian federal government, the project involves members of seven professions, 27 academics and 17 universities across Canada. The seven professions include four in health (medicine, nursing, midwifery and dentistry), two in education (teaching and academia), and accounting. We began working on developing the partnerships involved in this project in 2016 and, in addition to our academic partners, we have benefited from the insights and suggestions of partners representing professional associations, unions, and employers.

The research design for the project is a complex one, involving stakeholder interviews, a survey (comprising many questions that are common across all professions, as well as some questions tailored to the various professions), and interviews of individual workers from each profession. In both the survey and interviews, questions focused on respondents' individual, family, organizational and broader social contexts to understand the sources and challenges of their mental health concerns, as well as whether they had taken (or contemplated) a leave of absence to address mental health concerns, and what their experience of returning to work had been (if applicable). Given the timing of our data collection, we asked participants about both their experiences pre-COVID and during the pandemic. The final stage of the project (currently under development) is to work with interested organizations to pilot test interventions identified during the research that may assist individuals and their organizations to more effectively address mental health concerns among professional workers. We report preliminary insights from each aspect of the professional accounting research below. Future work will undertake comparative analyses across different professions.

Survey Findings

A bilingual (English and French) online, self-administered survey was conducted between end the of November 2020 and early May 2021. Participants across Canada were solicited via our partner organizations (including CPA Canada), direct email and social media. Of the 312 survey respondents in the accounting case study, approximately 80% have a CPA designation, while

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[3] https://www.healthyprofwork.com/.

others are in training or work in the accounting profession (without a CPA designation).

Furthermore, 35% work in public practice, 33% in industry, 15% in government, with the remainder working in education or other. The average age of respondents is 38 years (range 21 to 77) and experience in the accounting profession ranges between 1 and 42 years (average 14 years). Approximately two thirds of respondents are women, of whom 44% s report that they are working but have no managerial responsibilities. In contrast, a higher proportion of men (33%) report senior management/partnership responsibilities compared to women (19%). Of all the respondents, approximately 10% identify as racialized; however, numbers are insufficient to break results down by race. Finally, the largest number of responses came from the provinces of Ontario (62) and Québec (137).

Workers in accounting were significantly less likely to report suffering from mental ill-health in comparison to all professional workers.

Mental Health Among Accountants, Leaves of Absence and Return to Work
Figure 1 below depicts the proportion of survey respondents that reported experiencing mental health (MH) issues at some point in their career and illustrates the various pathways on which they embarked, including for some respondents taking a leave of absence (LoA) and returning to work. Figure 1 presents results for accountants separately, compared to all professional workers who completed the survey.

> In the context of this study, mental health issues include mental or psychological stress or distress, burnout, anxiety, depression, other mood disorders, substance use or dependence, posttraumatic stress disorder, or serious thoughts of suicide. It includes both short term mental health problems that temporarily limit our ability to function as well as more persistent and severe medical health disorders that require medical intervention.[4]

As shown in Figure 1, of the 312 accounting professionals that responded to our survey, 52% reported having suffered a mental health issue. Among those, anxiety was the issue most frequently mentioned, followed by mental stress or distress, then burnout. Of those having reported a mental health issue, 58% indicated making changes to their work, 48% considered taking a leave of absence – while only 24% took a leave – and, of those, 69% returned to work.

Interestingly, Figure 1 shows that workers in accounting were significantly less likely to report suffering from mental ill-health in comparison to all professional workers (58%) and were also less likely to embark along the pathway of leaves of absence and return to work. In breaking down the responses by gender identity, we find that women in accounting were significantly more likely to report having suffered from mental ill health (58.5%) than men (44.7%). No other significant difference along the pathway was noted, however.

A few caveats must be provided in interpreting the results. Since our respondents do not

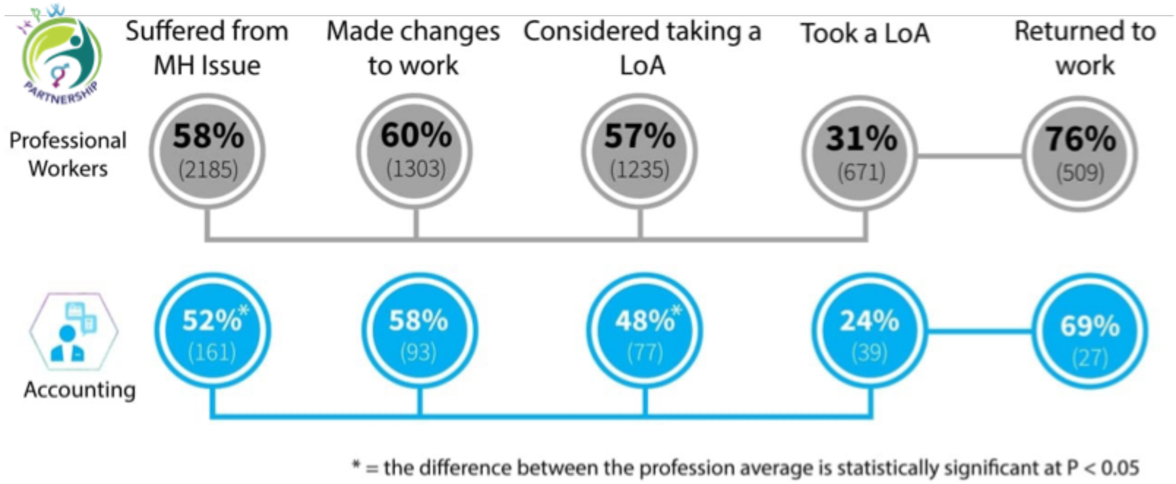
[4] Definition of 'mental health issues' included in the *Healthy Professional Worker Partnership: Preliminary Comparative Findings* report, December 2021, p.12. https://www.healthyprofwork.com/comparative-findings.

constitute a representative sample of the professional groups, caution must be exercised in comparing the groups. Furthermore, respondents who have experienced mental issues are likely to self-select to participate in our survey. Nevertheless, notable differences across all professional workers provide interesting insights.

As indicated in Figure 1, 58% of accounting professional workers addressed their mental health issues by, among other things, making changes to their work. The most frequently reported changes include taking sick days or using vacation time (62% of those with a mental health issue), seeking help from an allied health professional (e.g., psychologist, social worker, counsellor) (52%), or reducing workload (44%).

With respect to leaves of absence, Figure 1 shows that accounting respondents that have experienced a mental health issue are less likely to consider taking a leave of absence than all professional workers. Among the primary reasons given for not taking a leave of absence, 60% of accounting respondents indicated that their mental health issue was not severe enough to warrant a leave, while a little more than half expressed concerns about the professional impact on their career opportunities and stigma associated with disclosure. The impact of taking a leave on other staff and financial concerns were also considered, albeit they were of lesser importance.

Figure 1 – The Experiences of Mental Health and The Pathway To Leaves Of Absence And Return to Work



When asked about facilitators that supported them in taking a leave of absence, respondents identified having financial coverage while on leave, as well as having a supportive supervisor, as the most important factors. Conversely, having an unsupportive supervisor (or unsupportive union representative in unionized work environments) was most often cited by accounting respondents as a barrier in the course of taking a leave. Caution must be exercised in interpreting these results as few accounting respondents (39) took a leave, while only 27 returned to work following a leave. Despite these small numbers, results suggest that support from the supervisor is one of the most important factors in facilitating leaves of absence and fostering return to work.

Addressing mental health concerns of accounting professional workers is an important issue for the individual accountants experiencing these concerns and their employers. Recruitment and retention of qualified accounting employees is expected to be more difficult than usual during the pandemic.[5] In fact, our survey indicates that, of the 25% of accounting professionals that want to leave their employer, 67% have experienced a MH issue. Furthermore, of the 12% that want to leave the profession, 79% of them have experienced a MH issue. These numbers are not trivial. Addressing the mental health of employees should benefit them and their employers.

Interview Insights – Public Accounting Experiences

We report here on preliminary analysis of 14 interviews (13 female, 1 male) conducted between January and July 2021 with professional accountants who reported some experience working in public accounting. We identified interviewees through social media announcements about the research and through survey respondents who volunteered at the end of the survey to be interviewed. These individuals were willing to share their stories about their mental health experiences. Their experiences offer important insights on how accounting workplaces can become more inclusive.

We situate our insights in the context of prior research that finds the extent to which accountants feel burnt out and their intentions to leave their firm are affected by their perception of how they are treated by their firm,[6] and that organizational initiatives, such as the provision of mentoring, can increase employees' commitment to their employers and reduce their feelings of burnout.[7] Recent research in Australia[8] during the pandemic indicates that supervisory support can play an important role in the accumulation by women accountants of psychological resources such as resilience and wellbeing that can enhance engagement at work and reduce burnout.

When taking a leave of absence, respondents identified having financial coverage while on leave, as well as having a supportive supervisor, as the most important factors.

Several interviewees spoke about their experiences working in public accounting as being similar to a family, which included both the support of family, as well as guilt when considering the impact on colleagues of a leave of absence. In terms of mental health, several interviewees commented on how much they depend on a period of reduced work demands following each

[5] Hart, M. (2021). "How to retain staff amid surging turnover." *Journal of Accountancy*. https://www.journalofaccountancy.com/news/2021/aug/how-to-retain-staff-amid-surging-turnover.html Accessed March 10, 2022.

[6] Herda, D. N., & Lavelle, J. J. (2012). « The auditor-audit firm relationship and its effect on burnout and turnover intention." *Accounting Horizons, 26*(4), 707-723.

[7] Stallworth, H. L. (2003). "Mentoring, organizational commitment and intentions to leave public accounting." *Managerial Auditing Journal, 18*(5), 405-418.

[8] Ghio, A., and Moulang, C. (2021). "Women accountants and psychological resources." Working paper.; Ghio, A., Moulang, C., & Gendron, Y. (2021). "Always feeling behind: Women auditors' experiences during COVID-19." Working paper.

busy season to allow them to recuperate and reset. Minor mental health concerns sometimes escalated to more serious concerns when work demands or an extension to the busy season prevented this restorative period.

While a number of interviewees spoke about appreciating the work habits and client

commitment they developed while working in public accounting, they indicated this work ethic – which many suggested was fostered by the compensation and promotion systems in public accounting – could lead to mental health concerns. In particular, the habit of long work hours, that may be sustainable early in a person's public accounting career, can become problematic when additional work or care demands are encountered, in some cases leading to burnout. The three symptoms of burnout are "feelings of energy depletion or exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; [and] reduced professional efficacy"[9] or productivity. As such, addressing the root causes of burnout is important for both professionals and their employers.

The World Heath Organization defines burnout as a "syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed."[10] Comments by our

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[9] https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases#:~:text=feelings%20of%20energy%20depletion%20or,reduced%20professional%20efficacy.
[10] *Ibid*.

interviewees indicate that "chronic workplace stress"[11] cannot be "successfully managed" only by the professional accountant, but structures and practices within the public accounting employer also need to be modified to address such stresses. Flexible time off later in the year in recognition of long hours during busy season is a strategy some firms have used effectively to support their employees.

Other creative strategies may be needed when employees are experiencing challenges in managing the chronic workplace stress that is indicative of many professional workplaces. For example, additional accommodations may be beneficial for employees who are preparing for their professional exams, supporting aging parents, raising young children or, as was the case for many during the pandemic, juggling work and the educational needs of children.

Considerable research demonstrates that care work responsibilities (both at home and in the workplace) fall disproportionately on women,[12] suggesting that strategies to mitigate against burnout may need to be developed taking the various life circumstances of individuals into consideration, rather than adopting a one-size-fits all approach.[13]

Interventions, such as building mental health awareness and skills into the CPA curriculum, have the potential to be highly impactful.

Other interviewees noted that some firms seem to believe that mental health and wellbeing is strictly an individual matter, with the firm's responsibility for the mental health of their workers ending with the provision of an employee assistance program (EAP) or a workshop on being resilient. We heard from interviewees, however, that EAP counsellors frequently lack sufficient contextual understanding of the profession to be able to offer useful strategies or solutions, and individuals' resilience can go only so far in overcoming workplace structures and policies that may not support mental health and wellbeing. There is a sense among many interviewees that professionals and their workplaces need to recognize wellbeing is a collective, rather than an individual responsibility, and that work cultures and expectations need to be rethought and redesigned to foster wellbeing. Future steps in our analysis will explore whether these preliminary insights hold for all professional accountants. We report below on suggestions offered by all 30 interviewees for interventions that would support the mental health and wellbeing of professional accountants, regardless of their work context.

Interventions to Support Accountants' Mental Health and Wellbeing

Part of our research was to understand what promising practices or interventions participants believed could help in supporting accountants' mental health and wellbeing. Interviewees

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[11] One interviewee articulated several forms of stress encountered by professional accountants, including timeline/deadline stress, competency stress (related to clients' expectations that you will know the answers to their questions), communication stress and digital stress, especially as related to emails. This listing suggests that professional accountants face chronic workplace stressors.

[12] James, Y., Bourgeault, I., Gaudet, S. & Bujaki, M. (2021). "Care and academic motherhood: Challenges for research and tenure in the Canadian university." *Canadian Journal of Higher Education*, 51(4): 85-99.

[13] Barnes, B., Cussatt, M., Dalton, D. and Harp, N. (2021). *Declining Partner Aspirations During the COVID-19 Pandemic: A Contemporary Analysis of Work-Family Conflict in the Accounting Profession* (December 21, 2021). Available at SSRN: https://ssrn.com/abstract=3991248 or http://dx.doi.org/10.2139/ssrn.3991248.

provided numerous ideas for how issues around mental health at their workplaces could be managed better. Several distinct themes emerged, which we categorized as initiatives related to *education and socialization, organizational responsibilities, mental health promotion* and the *pathway between taking leaves and returning to work.*

Initiatives related to education and socialization

Suggestions related to *education and socialization* address the key role played by the earliest stages of the accounting career, including studying at university, writing professional exams and early years working in the profession. Socialization, which includes the process of learning how to behave, what is acceptable and what are the practical and ethical norms of the groups we participate in, begins very early on in the accounting profession. Studying at university or for the Common Final Examination, working to meet the practical experience requirements and "putting in time" in the early years while acquiring the necessary technical and enabling competencies, are all critical points when accountants co-create with each other their own professional norms.

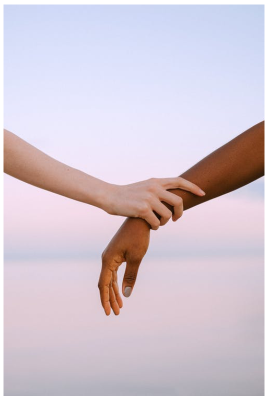
Insufficient attention to mental health matters during these early stages likely makes these matters more challenging to deal with it later on, and may mean that accountants promoted into supervisory roles lack the vocabulary and skill set to handle mental health issues as they arise with co-workers, subordinates and even themselves. Several interviewees suggested building mental health strategies into the CPA curriculum itself. The newly released Competency Map 2.0's[14] focus on CPAs' ethical mindset and human skills (defined to include resilience) may offer an opportunity to incorporate mental health and wellbeing skills into CPAs' educational and socialization experiences. Interventions, such as building mental health awareness and skills into the CPA curriculum, have the potential to be highly impactful, as they would reach all future accountants due to the obligatory nature of the profession's examination and practical experience requirements.

Initiatives related to organizational practices

Specific *organizational practices* hold plenty of opportunity for helping employees address mental health challenges. For instance, an independent individual who has the skill or desire to handle employee wellbeing issues could be designated as a central point of contact within a workplace. This could be helpful to individuals whose relationships with their supervisors might be more strained, or where they are reluctant to speak with their direct supervisors about mental health concerns. Additional organizational practices that balance a focus on the

[14] https://cdn-ca.aglty.io/comp-map-2/Attachments/NewItems/CPA%20Competency%20Map%202.0%20FINAL.pdf

wellbeing of accounting staff within an organization, with an outward focus on clients or other users of accounting information, would also be beneficial. For example, the capacity of existing staff to meet the demands of new clients or to meet client deadlines in a healthy manner should carefully considered when accepting new work or engagements.



In addition, quite a few participants suggested that a regular, mandatory check-in by employers with their employees would go a long way to solve several of the key problems they identified. These problems include the fact that employees are often reluctant to come forward to discuss their mental health concerns out of fear of the reaction they will receive. Mental health issues are often stigmatized or individuals who disclose they are struggling may fear they will be perceived as incapable. Further, employees are often on their own to source out who to talk to about mental health matters. Many are left to research resources on their own through “looking up phone numbers,” “filling out forms” and “reading pamphlets and websites” for self-help. Yet, when experiencing mental distress, individuals frequently lack the energy or drive to conduct this research on their own.

Normalizing a “wellness check-in” would provide individuals with a known, regular and mandatory touch point, which could help reduce stigma and reduce the need to self-source help. Related to this suggestion were other ideas to make it acceptable to voice mental health concerns, in the open, by providing safe spaces for discussion so that people could simply “talk about it without fear.” Workshops where people shared their experiences, or incorporating mental wellness into workplace meetings, might address this need.

Further, suggestions were made to think creatively about redesigning how work teams are structured. Solutions like being cross-trained on responsibilities on other teams, or having multiple points of contact within a firm with knowledge of the same clients, were suggested as ways to relieve the pressure if someone felt they needed to take a leave or reduce their work hours. One of the reasons accountants indicated they did not take a leave of absence, even after considering one, was that they felt the responsibility of being the only person at their level who had worked on a particular file or fearing the additional burden that would be placed on other members of their team. One person talked to us about how an initiative of this type was being worked on in their firm. In addition to supporting staff members, they also noted these cross-training practices can also help clients, as they have multiple points of contact if needed.

Initiatives related to mental health promotion

One point common to the suggestions in both of the prior categories of initiatives (education and socialization and organizational practices) was the need to do a better job of *mental health promotion*. This could include discussions by a variety of people (both inside and outside the organizations where accountants work) reflective of a more diverse range of personal and professional experiences related to mental health. For example, regular presentations about mental health promotion or by individuals of all backgrounds and organizational levels reporting on their lived experiences of mental health were mentioned as ways for people to "see themselves" and their experiences in those who promote mental health.

Initiatives to facilitate the path to taking a leave and returning to work
Finally, the *path to be taken* between identifying that one's mental health needs attention, to *taking a leave, and returning to work* was not clear for many. Suggestions to make these processes more widely known, well defined, understandable and non-stigmatized were common. These suggestions also indicated the need for a clearer understanding of the challenges faced by those returning to work after a leave, a better understanding of what the process for returning to work was and policies for how this can be facilitated. Since these highly trained, educated professionals make valuable contributions to their organizations, investments to support them in taking a leave to address their mental health and in re-integrating them back into the workplace should be prioritized.

Working Together to Foster Wellbeing
The pandemic has generated many workplace conversations about mental health. We hope these conversations lead to new policies, programs and ways of working that foster wellbeing and support professional accountants at all stages in their careers. As we begin to emerge from pandemic restrictions and return to "normal," we hope that addressing mental health and supporting wellbeing stay at the forefront of considerations for the profession. We hope that accounting students of the future will leave university and enter the profession better prepared for the stresses they may encounter as accountants and that, should they need accommodations to address mental health concerns at some point in their careers, effective and well-communicated policies and programs will be in place to support them, just as programs to support employees in returning to work after a physical injury or illness exist today.

A Step into the Future of the Profession: In Their Own Words…

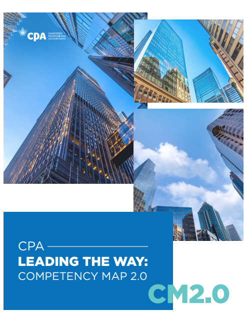
By Gundi Jeffrey, Managing Editor

Gundi Jeffrey is an award-winning business journalist specializing in writing about the accounting profession for various publications. In 1985, she co-founded The Bottom Line*, then Canada's only independent publication for the accounting and financial professions.*

CPA Canada recently released a new competency map to help prepare CPAs for a changing future. In its accompanying press release, CPA Canada noted that "The new competency map is intended to serve as a guide that will inform the profession's approach to ongoing growth and development for all CPAs."

According to the press release, "as the pace of change accelerates, the CPA profession must adapt accordingly. After more than two years of consultations with employers, educators, students/candidates and members across the country, the profession has introduced *Leading the Way – Competency Map 2.0 – the path forward for our profession*, which lays the foundation for the new CPA certification program."

Developed under the guidance of the Competency Map Task Force, the new CM2.0 is meant to ensure current and future CPAs are equipped to move forward with the skills, resilience and knowledge necessary to thrive in a constantly evolving marketplace. Tim Jackson, FCPA, the president and CEO of Shad Canada and chair of the Competency Map Task Force (CMTF), believes that "it is essential that CPAs continue to be leaders in Canada's economy and society, but we must be cognizant of the fact that our work takes place in a rapidly evolving environment. CM2.0 strives to balance our traditional professional competencies with the need to understand broader societal issues."



ThinkTWENTY20 decided to interview Mr. Jackson to explore the issues that led to the new competency map and its current form and presentation. Editor-In-Chief, Gerald Trites, and Managing Editor, Gundi Jeffrey, conducted the interview jointly.

ThinkTWENTY20: We were *told that the new competency map (CM 2.0) basically describes the future of the profession in Canada. Would you agree? Or is it simply one important step along the way?*

Jackson*:* I think, for me, it's more the guide posts for the future of the profession. So, when we tried to pull this map together, we tried to look to the future but without being overly prescriptive.

ThinkTWENTY20: *The new map is much shorter than the previous one, presumably because of the principles-based approach. Why did the CMTF move to a principles-based approach?*

Jackson: What we've done is produce a map that we hope is more nimble and more adaptable than the previous one. We considered what might be appropriate for a rapidly changing world. So, I think it's more a reflection of the world today and where we see the profession going. We need to make sure that the profession stays relevant. For that reason, this is more a guide than prescriptive rules. We went from about 160 pages and 180 competencies to 30 pages and 35 competencies.

It took us two years to develop this new competency map and it will take at least another two years for the profession to implement it. But the in the world we now live in is changing very rapidly. If you need five years to process the changes happening, I just don't think that is very realistic for keeping up with what is occurring. We were told, when we started this process, to take a blank-page approach – don't amend the map, start from scratch. Then we did a lot of consultation during literally hundreds of meetings, engaging thousands of people. Yes, the world is changing so rapidly and we wanted to have a map that was adaptable and principles based, instead of prescriptive.

I think the reality is that the new map is more flexible and reflects the way people work today. An example I often give is that we think it is important that a new CPA understands what a tax credit is. But we didn't think it was important for them to memorize a list of a 100 different tax credits that exist in a certain period of time. What is more important is to learn "where do I need to go to learn about a certain tax credit."

The map is more a reflection of the world today and where we see the profession going. We need to make sure that the profession stays relevant.

When I went through my studies, I memorized the *Handbook* and I memorized the tax act and then you went in and wrote the exam. What we're saying now is that you need to know where to look, instead of memorizing those specific things.

ThinkTWENTY20: *Years ago, the profession starting using comprehensive questions in the exams. Those were also designed to move away from the idea of requiring students to* *memorize a lot of material and think of issues in a situational sense. But now the competency map is more principles based. So, one of the things we were wondering about, when we embrace areas, such as data, do we then go to the universities and ask them to train people in data and data management, which is a huge subject? How do we keep the educators in the system from shooting off into all sorts of different directions?*

Jackson: There is a process now in place on how to best implement this map and provide guidance to institutions, employers and firms. One of the things we don't address in the map is: where do you learn the specific competencies, which should be learned in schools, in internships, etc. We heard, during our consultations, from one of the firms, that new employees didn't know how to assess data properly, so much so that they partnered with Simon Fraser University to offer a course so that their new hires could supplement that knowledge.

ThinkTWENTY20: *What were the key drivers of change that influenced the structure and content of the new map?*

Jackson: I think part of it is that the world is changing so rapidly, and we wanted a map that was flexible and adaptable. But we also didn't want to take four or five years to develop the map. We were doing a lot of research and were given significant resources from CPA Canada and the provinces to do that. We did a literature scan, we looked at competency maps in other jurisdictions and other professions and then we looked at other research. For example, we looked at the work done by the World Economic Forum, particularly their surveys on jobs of the future. In the last two surveys, among the highest-ranking jobs that are disappearing were accountants, bookkeepers and auditors. The jobs that are emerging deal with data. We saw that the traditional things that accountants are perceived to be doing were going away or morphing. And we wanted to have a map that reflected these changes – and what we think people will expect of what accountants and auditors do is also changing.

The world is changing so rapidly, and we wanted a competency map that was flexible and adaptable.

Specifically, we see several key factors that are influencing the dramatic shifts I am talking about:

- **Data governance, artificial intelligence and machine learning:** Along with other innovative sectors, these areas are creating new opportunities for professional accountants who have, or acquire, the right skills.
- **Automation:** This continues to present challenges to the profession. Future CPAs need to be agile, adaptable and highly skilled while maintaining the assurance and ethical lenses that are essential to ensuring organizations are equipped to manage this transition.

- **Shifting expectations of businesses and society:** Already, CPAs are being required to use new skillsets and add value in non-traditional ways to analyze environmental and social performance measures, such as diversity, equity and inclusion.

ThinkTWENTY20: *In the press release about the CM 2.0, you stated: "The CM2.0 strives to balance our traditional professional competencies with the need to understand broader societal issue." How does CM 2.0 accomplish that?*

Jackson: We believe that new CPAs need to have an understanding of issues such as equity, diversion and inclusion, they need an understanding of Canada's history with indigenous people, need an understanding of environmental, social and governmental issues. They don't need to be experts in those areas but they do need to understand that their work takes place in a broader context. So, we have included these areas in the sub-competencies.

We also did a consultation with auditor generals across Canada. One of them told us that they were doing diversity audits. She said she needed auditors to do that work because they understand audit skills. But if they don't understand the concept of diversity, they don't fully understand what they are auditing.

We also had consultations with indigenous leaders from the business community who shared with us what they thought should be included in the map.

ThinkTWENTY20: *The document also outlines new competencies such as data management, data analysis, crypto, etc. There already was a heavy curriculum for CPAs. Will this expansion make it even more difficult for educators and students? Or will this be mitigated by having separate streams depending on which area a student is interested in?*

Jackson**:** We came out from a common core, so everybody will obtain the same basic knowledge and then they can opt for different areas of specialization post-certification. We also heard that post-certification institutes feel like they don't have enough latitude in what they can teach. We heard from schools of accounting and others that they were desperate to have this latitude to differentiate themselves. An example I often give is consolidations. When I went through, I took two courses on consolidation. Well, today we do consolidations by pushing a button. So, it is important that a CPA understands what a consolidation is, but they probably don't need two undergraduate courses, using Excel spreadsheets.

Therefore, it is likely that some new things will be added to the curriculum, but by having a less prescriptive map, we can also eliminate a bunch of stuff. The map will also allow institutions to differentiate themselves a little bit. As we went through the consultations, it became very clear that they felt they couldn't do things that might be relevant to their geography. For example, one school's professors told us that many alumni come back to their communities to work, and they would love to offer courses that reflect the types of businesses and industries in their community. But they don't have the opportunity to fit anything else into their curriculum. I think that the competency map, by being less prescriptive, will allow for this kind of flexibility.

Of course, there will also be some people who will say I don't see my course on that new map. We recognize that there are going to be some changes and challenges with the new map – and they will have to take some material out of their curriculum to put some new stuff in.

ThinkTWENTY20: *CAs and CPAs established the profession over the years as a highly respected profession primarily because of their deep knowledge of a few core areas – accounting, auditing, tax. As the curriculum broadens, is there a danger of losing this depth in core areas?*

Jackson: As I have mentioned, we do believe that in-depth courses on various topics can be done post-certification. For example, students need to learn some things about taxation, but they don't need to know it all or in depth as, after certification, they may never even touch tax.

What we bring to the future is that we are an ethical profession, we have an ethical set of standards that we work toward and we are a regulated profession

ThinkTWENTY20: *Change is continuing to take place at incredible, growing rates – Covid being responsible for so much of it so fast. How will we keep up with this change going forward? How will we carve out our space in this changing world? Do you see more reliance on experts in other fields?*

Jackson: We tried to draft the map so that the profession can make changes to what is on a test or assessment without having to go through a four-year process to change the map itself. At the end of the day, I still think that, as accountants, we will be sorting, updating, analyzing and giving opinions on data. What that data is may change, but there will usually be some financial element to that data. I think that is what we bring to the future – the idea that we are an ethical profession, that we have an ethical set of standards that we work toward and that we are a regulated profession. So, whether it is the audited financial statements or some other set of data, you can rely on CPAs to validate, assess and opine on them. I just think that we need to be adaptable so we can say that, as the world changes, we adapt! At the end of the day, whether it's cryptocurrency or whether it is bitcoin, someone is going to have to play a role. It might as well be us or someone else going to take advantage of the situation and do those things instead.

It is interesting that, when we first drafted the map, we did so by pushing some of the things that accountants do further to the back. But then people would say, "but that is what makes us accountants." So, we re-drafted it and said that this is us. We have a body of knowledge with which we are comfortable – but we're not limited to that. People don't go to a CPA just because we know how to do an audit of a set of financial statements. We serve a broader business context. I think our goal should be to have more CPAs in the C-suites of corporations, non-profits and the public sector because we are valued for all the competencies we have. We don't just have the pure technical knowledge.

ThinkTWENTY20: *Isn't there a risk of trying to be something for everybody? Some of the work that CPAs do, such as audits are highly regulated and very, very demanding. In fact, the regulators are getting more demanding all the time. And the penalties for not performing well can be massive. The skill sets demanded of auditors can be very intensive and need to continue to be carried out intensively in order to meet those demands.*

Jackson: That's right. And that is why we put this right up front in Part 1. Those skills are what makes us accountants and defines a CPA. The fact that others rely on us to meet those standards for audits and when we give audit opinions, that adds credibility. We are a regulated profession and, in most jurisdictions, we are the only profession that can issue audit opinions that are accepted by regulators. That's why we put that up front. At the end of the day, that is what really differentiates us – CPAs versus other business professionals.

We are the only profession that can issue audit opinions that are accepted by regulators. And that is what really differentiates us – CPAs versus other business professionals.

ThinkTWENTY20: *How do you expect the educational system to change as a result of this new competency map?*

Jackson: For one thing, the map will allow post-academic institutions to differentiate themselves a little bit. They will still have to teach to a common core, but it gives them possibilities to highlight what is unique about them, their geographic area and the faculty members they have on their teams. It will hopefully allow them to offer an experience to students that has some more breadth to it than what they had before. As an example, when I went through, I was in the Faculty of Arts in Waterloo University, in what is now the School of Accounting and Finance. The course load was such that I had the ability to take non-accounting courses. But that is becoming tougher and tougher. So, one of the things that we hope will happen through this map is that we recognize that there is a need for broader education, as well as getting the specific core accounting topics.

ThinkTWENTY20: *So, what's next?*

Jackson: The profession has created a Certification 2.0 working group who will be responsible for implementation of the new map including determining what is learned where (at school vs. on the job), how assessment (i.e., the CFE) may have to change and what guidance will be provided to post-secondary institutions and employers.

Sustainability Assurance Services – Hot Market or Tough Sell?

By Gregory P. Shields, CPA, CA

Gregory is a member of the board of directors of the University of Waterloo Centre for Information Integrity and Information Systems Assurance (UWCISA). He is also a member of CPA Canada's Audit Data Analytics Committee. Before his retirement, he was CPA Canada Director, Auditing and Assurance Standards. His recent projects include developing non-authoritative auditing guidance on data analytics, cryptocurrencies, and accounting estimates.

In his famous 1970 essay in the *New York Times*, influential economist Milton Friedman said the one and only social responsibility of business is to increase its profits, while operating in free and open competition without deception fraud.[1] Times have changed. A 2021 IFAC/AICPA/CIMA survey of 1400 companies globally showed 91% of respondents reported some level of information on their environmental, social and governance (ESG) responsibilities. Also, 51% obtained some level of assurance on aspects of that information.[2,3] A draft EU Corporate Sustainability Reporting Directive (CSRD) requiring limited assurance will likely come into effect in 2023.[4] And, now, the IFRS Foundation has set up the International Sustainability Standards Board (ISSB) to become a major player in the ESG information world.

Canadian CPAs who do audits and reviews for a living might reasonably expect a lot more work to come their way. Not all ESG information sources can be trusted. Independent assurance could be vital in reducing material misstatements and related bad decision making. Unfortunately, any expectation of a hot sustainability assurance services market for CPAs is illusory. On the demand side, Canadian regulators will not likely mandate sustainability assurance services and thereby create a significant market. A surge in companies voluntarily obtaining assurance is also improbable. On the supply side, the assurance divisions of CPA firms may well find it difficult to recruit and retain personnel who have the required experience and expertise to take on highly complex, broadly-scoped sustainability assurance engagements.

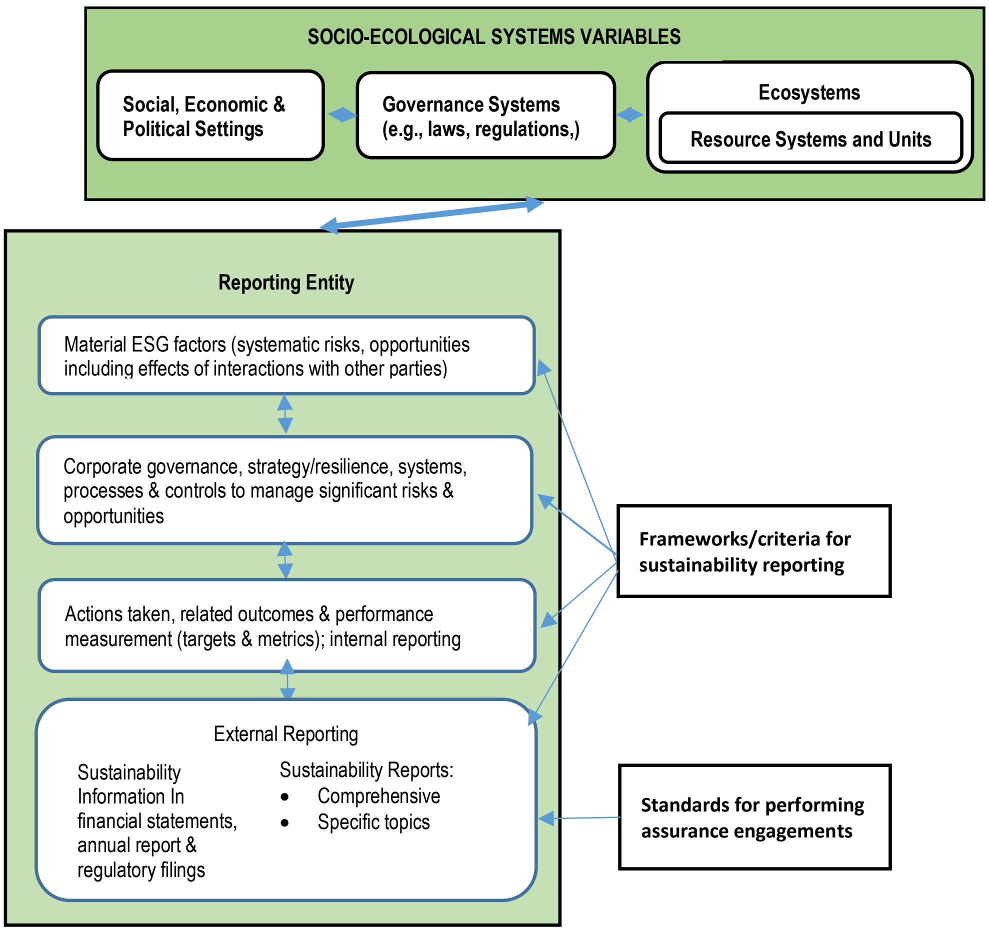
Not all ESG information sources can be trusted. Independent assurance could be vital in reducing material misstatements and related bad decision making.

Potential Market

Figure 1 provides a high-level overview of a sustainability information process and suggests matters for which assurance might be warranted.

At the overall society/environment level, ESG information is pervasive, complex and interconnected. One ESG model has seven socio, economic and political settings variables, three ecosystems variables, seven resource units, nine resource systems variables, eight governance systems variables, nine “actors” variables (i.e., variables-related entity operations), 10 interactions variables and three outcomes variables. Each variable has vast amounts of relevant data associated with it.[5]

Figure 1 Overview – Sustainability Information



Not all ESG matters at the society level will be relevant to an individual entity. As indicated by the two-directional arrow between the socio-ecological factors and an individual entity, however, what is “material” takes into account both how the entity is affected by ESG matters and how that entity affects society.

There are many frameworks/criteria against which ESG information can be evaluated. Two examples are those provided by the Global Reporting Initiative (GRI) and the Financial Stability Board’s Task Force on Climate Related Disclosures (TFCD). Material matters that may require disclosure include, for example, (1) ESG-related systematic risks and opportunities including effects of interactions with other parties (e.g., the entity’s supply chain and customers) and (2) aspects of their corporate governance, strategy/resilience, systems, processes and controls to manage significant risks and opportunities, as well as targets and performance metrics. The need to meet criteria for ESG disclosures often will affect all aspects of how an entity addresses sustainability, although this may not always be the case. Aspects of the process are iterative (as indicated by the two-directional arrows) with change continually being made as new information comes to light.

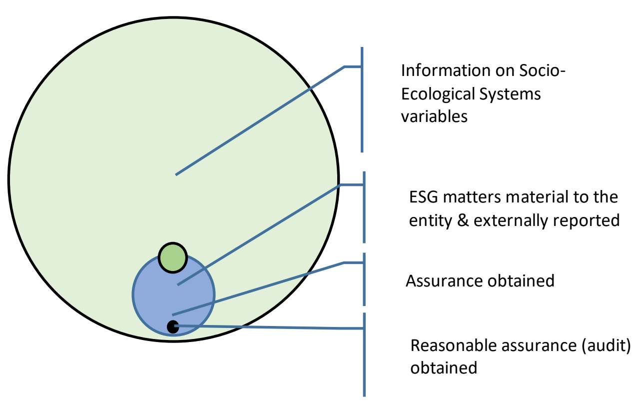
Auditors do not normally provide assurance on ESG information in documents such as annual reports or regulatory filings, but may read this information to identify any material inconsistencies with the audited financial statements.

An entity might request an audit or review of a report on any aspect of its ESG process, including controls. These might include, for example, a comprehensive sustainability report, or reports on specific aspects of ESG such as allocation of Green Bond proceeds. Financial statement auditors do not normally provide assurance on ESG information in documents such as annual reports or regulatory filings, but, for example, read this information to identify any material inconsistencies with the audited financial statements.

Despite the potential indicated by Figure 1, significant growth beyond the current sustainability assurance services market is unlikely.

Current Market
CPA Canada's Research Guidance Support Group has started an analysis of the current Canadian landscape for sustainability assurance services. The results are not yet available. Figure 2 shows, however, the results of a limited non-rigorous web search. The amount of ESG information on which assurance is provided is likely small, and most of that is reviewed rather than audited.

Figure 2 –Canadian Sustainability Assurance Market: Now & in Future

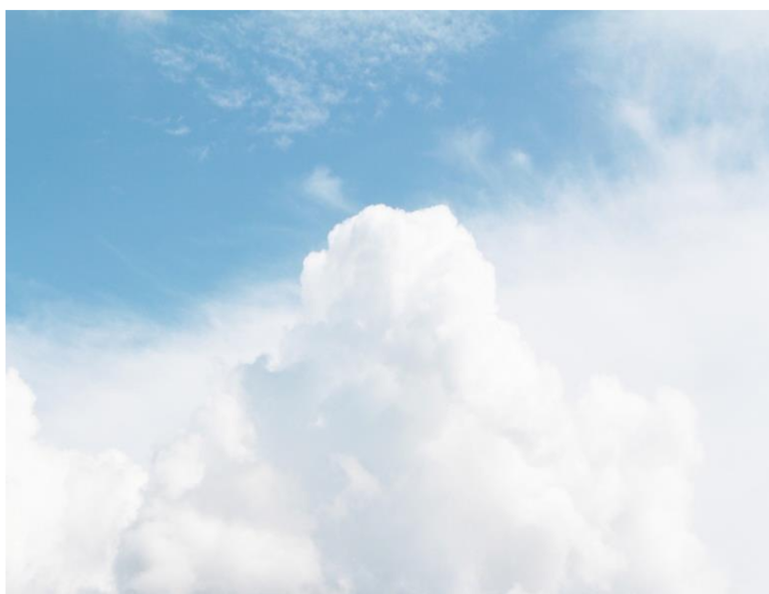


Although this may seem odd, given what various surveys say, companies making only miniscule ESG disclosures and having only a few aspects of that reviewed may positively skew some survey results. The *TCFD 2020 Status Report* injects a useful dose of realty. It notes that, despite improvements made, companies' disclosure of the potential financial impact of climate change on their businesses and strategies remains low.[6]

In the Canadian financial services sector, major banks provide comprehensive sustainability reports, but assurance is obtained on only very small amounts of specific types of information. For example, the 2020 comprehensive sustainability report by CIBC covers its governance responsibility, social responsibility (e.g., community building, stakeholder inclusion, culture), and environmental responsibility. Throughout the report, a small † symbol indicates a "key environmental and social metric" for which limited assurance was obtained. The related "letters of assurance" appear in a CIBC's ESG Document Library (a webpage separate from the sustainability report).

CIBC reported more than 30 social responsibility metrics. Its external auditor provided limited assurance on only four of them: employee engagement score and three related to executive positions approved by the Board that were filled by women, visible minorities and the Black community. An engineering firm reviewed six GHG emissions performance metrics out of the more than 80 environmental responsibility metrics reported. No assurance was obtained for any of the seven governance responsibility metrics.[7] In summary, of over 120 performance metrics reported, only a few were reviewed and none were audited.

Further, no assurance was obtained for the many significant ESG disclosures beyond performance metrics. For example, CIBC disclosed comparative data on its loans in environmentally sensitive sectors (forest products, mining, oil and gas, utilities and agriculture) as a percentage of its total loans. The report states that the bank performs an enhanced due diligence review for specific sectors and prohibits or limits certain transactions for sensitive sectors.[8]



None of this information appears to have been reviewed or audited. Information on responsible investing can be a particularly sensitive aspect of a financial institution's operations. CIBC's approach was to provide a link to the *CIBC Asset Management's United Nations Principles for Responsible Investing* (PRI) Report. [9] That report notes that no third-party assurance was obtained on the information provided and there are no plans to do so. [10] Concerns are being expressed about the reporting of so-called ESG assets. Addisu Lashitew of Brookings notes that, in the absence of detailed, verified information, asset managers can fall prey to "greenwashing" and classify securities of unsustainable companies as ESG assets.[11] Also, reactions to the January 2002 CSA Staff Notice 81334, about misleading ESG asset information, have not all been positive. The groundswell in ESG assets is viewed as being like the "wild west," with concerns expressed that the CSA guidance does not impose new obligations and is not enforceable.[12] That guidance makes no reference to any assurance being obtained.

For ESG information outside of its sustainability report, CIBC's external auditor verified that proceeds from a "Green Bond" and an Index Growth GIC were allocated to eligible projects (i.e., renewable energy or green buildings).[13]

Although CIBC's approach to obtaining assurance on sustainability information seems largely similar to that for the other largest Canadian banks, the external auditor of one bank (rather than an engineering firm) reviewed its GHG emissions. Another bank did not obtain assurance on any information in its comprehensive 2020 sustainability report

Low Expectations for Increased Market Demand

Questions are now being raised about the value of ESG reporting, even in the absence of assurance. In the view of a former COO of Timberland (a pioneer in ESG awareness), "evidence suggests that the impact of the measurement and reporting movement has been oversold" and "Worse yet, the focus on reporting may actually be an obstacle to progress—consuming bandwidth, exaggerating gains, and distracting from the very real need for changes in mindsets, regulation, and corporate behavior." [14]

Contrary to this view, a 2020 EY Global survey suggests that both ESG information and assurance on it may be highly valued.[15] Respondents do not appear to have been asked, however, how much they would be willing to pay out of their own pockets for assurance services. When faced with direct personal costs or losses, attitudes change. Take, for example, Unilever, a large UK conglomerate known for its pursuit of ESG goals. Faced with a poor share value performance, a major shareholder said the company has "lost the plot" by pursuing "sustainability medals" at the expense of financial performance. [16]

On the other hand, proactive pursuit of goals related to climate change may be important, for example, to shareholders of companies that depend on bank financing. European banks are beginning to drop clients who are not making significant progress in decarbonization. Banks view these companies as having uncertain futures and as being high credit risks.[17] Would banks demand more assurance from CPAs to inform their lending decisions? Likely not. Decarbonization actions in the oil and gas sector could include, for example, changing power sources, reducing fugitive emissions, electrifying equipment, reducing routine and non-routine flaring, and increasing carbon capture use and storage.[18] Companies wanting continued or additional bank financing would likely give banks access to information on their decarbonization efforts. A bank's own analysts would obtain the required data and plug it into their credit risk and capitalization models.

There is an impasse on what those who may benefit from ESG assurance services want and what those providing it can provide.

Are customers likely to demand assurance on ESG features of a company's products? An *EY Future Consumer Index Survey* shows that 61% of customers plan to pay more attention to the environmental impact of what they consume. Sixty-four percent, however, intend to focus more on value for money — creating a tension over who should pay for sustainability. Consumers often say they'll pay more for sustainable products and services, but then don't support that intention with action.[19] Given the recent high inflation rates and supply-chain issues resulting from the COVID pandemic, consumers are even less likely to care whether ESG claims about products have been independently reviewed or audited.

Also, wording in assurance reports is not doing the profession any favours. A 2019 survey of sustainability assurance service providers showed that a significant number of respondents recognized that technical language, including the proliferation of negative wording, such as "nothing has come to our attention," can be confusing and even misleading for stakeholders. Also, some reports contain limitation of responsibility wording (e.g., "We do not accept or assume responsibility to anyone other than to the company for our work, or for the conclusions we have reached in this assurance statement").

Such wording distances assurance providers from the content and quality of the assurance report and could be questioned by stakeholders.[20] Assurance service providers perspective would, however, be correct in saying that, without such language and in the absence of a more appropriate legal liability regime, they are exposed to an untenable risk of potential litigation from a vast range of stakeholders. There is, therefore, an impasse on what those who may benefit from assurance services want and what those providing it can provide.

Low Likelihood of Canadian Securities Regulators Mandating Sustainability Assurance

Canadian securities regulators may follow the EU's lead and mandate extensive ESG disclosures but not mirror the EU's proposal to require independent limited assurance on these disclosures.

The November 2021 IOSCO recommendations on asset management disclosures stated that ISSB's new standards could deliver a global baseline for sustainability reporting but that the auditability of future reporting standards will be considered at some future date.[21] The latter comment has the air of being platitudinous. The Ontario Securities Commission is an IOSCO Board member.

Regulation in Canada is more likely to be much more influenced by what happens in the US than in Europe. US senator Elizabeth Warren expressed concern about the SEC's failure to develop a mandatory climate risk disclosure rule proposal by the end of 2021. She refers to delays caused by concerns about legal challenges (from politicians who oppose the measures) and about whether the proposal should require auditor sign off on the disclosures.[22] While mandatory climate-related disclosure in the US seems imminent, mandatory assurance seems far less likely.

Even if the SEC were to mandate assurance on ESG information, Canada may not go in the same direction. Since 2002, some public companies in the United States are required have their internal control over financial reporting audited. Public accountants in Canada widely anticipated that Canadian securities regulators would take a similar step. That did not happen.

The identification of material misstatements would be difficult because so much ESG information is qualitative.

A 2017 study suggested not requiring such audits has contributed to possible underreporting of material control weaknesses by Canadian companies. When asked to comment on the results of this study, Ed Waitzer, former chair of the Ontario Securities Commission, stated "The consensus view was that management should attest, and requiring the auditor to attest on internal controls was an unjustified imposition of cost."[23] If regulators take the same position regarding sustainability assurance, why could companies ever decide to voluntarily incur significant costs?

Hurdles on the Supply Side

Providing assurance on a comprehensive sustainability report would conceivably require the engagement team to include experts in many disciplines including, for example, chemical engineering, environmental science, toxicology, public health and sociology. As indicated by a January 2022 study by Deloitte, however, ESG skills are scarce in the Canadian financial services sector.[24]

To obtain and retain experts, assurance services divisions of CPA firms would be competing not only with outside firms, but also with their own consulting services divisions. Experts might often find performing consulting services much more attractive than assurance services. They would not have to face the burdens of complying with onerous assurance and ethics standards. Also, clients might place higher value on consulting services that help them identify and respond to significant sustainability risks, design and implement systems and controls, and set appropriate targets and performance metrics.

Of course, sustainability assurance services require high level assurance skills as well as subject matter expertise. The CPA profession has the inside track there, given its extensive experience in providing assurance on financial statements. There is also a strong desire to maintain connectivity between financial reporting and sustainability reporting.[25]

There would, however, be significant technical assurance hurdles to address if assurance was to cover many aspects of a comprehensive sustainability report. These would relate, for example, to fundamental concepts such as what constitutes a material misstatement. Also, the question arises as to whether an audit of a comprehensive sustainability reported would ever be requested.

Regarding materiality, the prototype IFRS/ISSB prototype framework would make life easier for preparers and CPA assurance providers. The scope of this framework focuses only on sustainability matters that affect an enterprise's value, including the amounts, timing and certainty of future cash flows over the short, medium and long terms.[26] Materiality would be viewed from the perspective of the effects of omissions, misstatements or obscuring information that could reasonably be expected to influence decisions that *the primary users of general-purpose financial reports* (i.e., investors, lenders and other creditors) make on the basis of those reports (emphasis added). Other frameworks, such as underlying the EU CSRD, would take into account the effects on decisions of a much broader range of users (beyond investors, lenders and other creditors). The IFRS/ISSB's focus has been challenged on the basis that "an enterprise value/cash flow approach has nothing to do with the impacts of an organisation on society or the environment" and "Can a private sector body that has put itself forward to take an 'investor perspective' be trusted to have a focus on sustainable development?"[27]

The identification of material misstatements would be difficult because so much ESG information is qualitative. The IFRS/ISSB prototype framework does not provide any relief in that regard. It defines sustainability-related financial information as "information that provides insight into drivers of enterprise value, providing a sufficient basis for users to assess the resources and relationships on which the entity's business model and management's strategy for sustaining and developing that model depend, by understanding (a) how effective the entity's business model is at creating value and generating cash flows, including their timing and certainty, over the short, medium and long term; (b) how scalable and adaptable the model is, and; (c) how resilient and durable the model is. This information includes, but is not limited to, information about matters such as climate change; water use and discharge; biodiversity; and employees and human rights."[28] So, for example, if the entity maintains that its model is both resilient and durable regarding all those ESG matters, what criteria would management use to make this forward-looking determination? And how would an assurance provider identify material misstatements, omissions, or obscurities? To many, this task may understandably seem mind-boggling.

Further, stakeholders vary significantly in their ideas about what constitutes a material misstatement. For example, banks who finance entities in environmentally sensitive sectors may face allegations of greenwashing if a stakeholder group is not satisfied that the recipient of funds (who is not a related-party of the bank) operates in an environmentally sensitive way.[29] It is far from clear whether it would be practicable to take such matters into consideration within the scope of the sustainability assurance engagement of a lender.

Finally, would an assurance services provider ever be asked to audit a comprehensive sustainability report? The draft EU CSRD would mandate limited assurance on ESG information. Key reasons stated for not mandating reasonable assurance included the absence of a commonly agreed standard for assurance of sustainability reporting, especially with regard to forward looking and qualitative disclosures. Also, reasonable assurance is more costly than limited assurance.[30] Similar constraints would apply in Canada.

Conclusion
Milton Friedman's doctrine of virtually no corporate social responsibility likely still has some supporters. Nevertheless, comprehensive sustainability reporting may well significantly increase in Canada. That will not likely be the case for sustainability assurance services for several reasons, but mostly because regulators and others perceive costs as exceeding related benefits. These services will continue to be a tough sell, largely restricted to a few performance metrics and specific ESG topics.

Comprehensive sustainability reporting may well significantly increase in Canada. That will not likely be the case for sustainability assurance services.

End Notes:

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3 International Federation of Accountants (IFAC), American Institute of Certified Public Accountants (AICPA) & Chartered Institute of Management Accountants (CIMA): *The State of Play in Sustainability Assurance*, June 2021, State of Play Sustainability Assurance (accessed 2022-02-15).

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7 CIBC, *Sustainability Report 2020* (2021), CIBC Corporate Sustainability 2020 (accessed 2022-02-17).

8 CIBC, *Sustainability Report 2020*, pg. 32.

9 CIBC, *Asset Management UN PRI Report*, pgs. 81 and 82. CIBC Mgt. 2020 UN PRI Report (accessed 2022-03 -01)

10 CIBC, *Sustainability Report 2020*, pg. 32.

11 Lashitew, Addisu, *The risks of US-EU divergence on corporate sustainability disclosure*, Brookings (September 28, 2021), Brookings blog (accessed 2022-02-26).

12 Miyagi, Cathy, *"Wild west': ESG disclosures leaving investors baffled,"* Bloomberg BNN, 2022, Bloomberg ESG Wild West (accessed 2022-03-01).

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16 *The Economist*, "Unilever – Health Cheque" (January 22, 2022), pg. 59.

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[22] Warren, Elizabeth, Letter to SEC Chairman Gary Gensler, February 9, 2022. Warren letter to SEC (accessed 2022-02-24).

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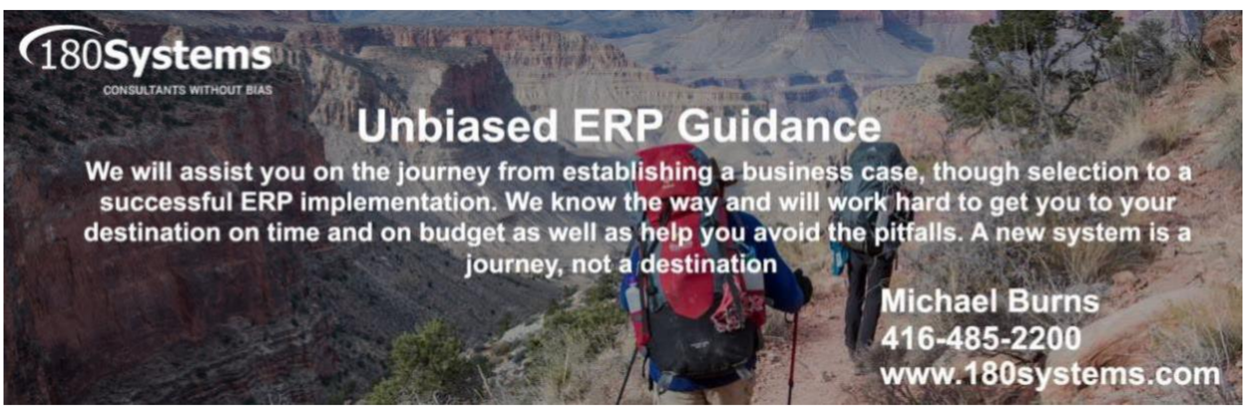

Thinking of Blockchains as Accounting Information Systems

By Clinton White, Jr

Professor emeritus, Department of Accounting & MIS, University of Delaware. Clinton (Skip) White graduated from Indiana University in 1981 with a DBA in Accounting & MIS. His academic career has been focused on the application of emerging information technology to accounting and business. He has published articles in a number of academic journals, including, The Journal of Information Systems, MIS Quarterly, Information & Management, The Journal of Accounting Education, and The Journal of Accountancy. He currently publishes several supplemental texts on XBRL and blockchain

At a high level, we think of accounting information systems as computerized systems that process business transactions, collect and store them as data, typically in proprietary databases, and report on demand the results of operations. At a higher level, we think of accounting information systems interacting with other systems as part of an enterprise information system that supports short and long-range decision making to run a business entity. And, since business entities interact with other business and regulatory entities, their internal information systems need to be able to interact with those outside of their corporate boundaries, forming an ecosystem of information systems. Blockchains are a relatively new form of information system that are becoming part of a business entity's information systems ecosystem. This article will discuss blockchains and how they interact with traditional accounting information systems (AISs) to become part of redesigned business information ecosystems.

At a basic functional level, blockchains exhibit the basic characteristics of traditional AISs – they collect transactions, store them and report them on demand. In addition, they exhibit a number of characteristics not normally associated with traditional AISs. To name a few, they process transactions based on agreed-upon rules in digital contracts, they validate and combine transactions to form blocks, which are then linked together, and they share transactions in an open ledger.

Since business entities interact with other business and regulatory entities, their internal information systems also need to be able to interact with those outside of their corporate boundaries.

The phrase "accounting information system" refers to a functional type of information system – one that processes accounting transactions, without reference to the technology involved. The word "blockchain," on the other hand, refers to a particular type of technology without reference to a functional business purpose. Blockchain is both a concept and a technology with which to implement it. As a concept, "blockchain" literally refers to transactions that have occurred over a period of time being collected to form a block of transactions, validated, time stamped, stored as a block, and connected to previous blocks to form a "chain." As explained in this article, the way a blockchain functions varies depending on the purpose of the blockchain. For example, it can be a stand-alone accounting information system or, more typically, it can interface with an entity's existing internal information systems. In either case, a blockchain can add significant value to a business entity and its information systems ecosystem.

***Bitcoin* As a Functional AIS**

A good example of a blockchain that acts as a functional AIS is *Bitcoin*. *Bitcoin*, with a capital *B*, is a network on which users buy and then spend *bitcoins*, with a small *b*. The *Bitcoin* network is a blockchain and *bitcoins* are its cryptocurrency – they exist only in digital form. We refer to the *Bitcoin* blockchain as a "permissionless, trustless network," meaning that anyone can join by simply downloading the app and purchasing *bitcoins* from a broker. Each user does not, however, have to trust any other user on the network. Instead, users trust the *Bitcoin* blockchain itself because of the way that transactions are validated and secured before they are added to a block that then is added sequentially as the next block on the blockchain.

From a user transaction perspective, the way it works is quite straight-forward. Users purchase a number of *bitcoins* for their digital *wallet* and then spend them by sending *bitcoins* to another user, to buy coffee at *Starbucks*, for example. A little more technically, a *bitcoin* transaction to buy a *Starbuck's* coffee consists of the purchaser's public digital address on the *Bitcoin* network, the number of *bitcoins* equivalent to the price of a cup of coffee, *Starbucks'* public digital address, and the purchaser's private digital signature to authorize the transaction. Behind the scene, on the *Bitcoin* network, the transaction is collected, validated, timestamped, combined with other transactions to form a block, timestamped again, and added as the next block on the chain. All transactions on the entire blockchain are available as a public ledger (see www.blockchain.com/explorer). At this site, you will notice that, while each transaction, and the block to which it belongs, is publicly available, the identity of individual users is not revealed, only the "From" and "To" digital addresses. Individual users are anonymous to the public, but address owners have access to their data.

From an AIS perspective, the *Bitcoin* blockchain acts as a functional accounting information system. It collects each transaction, validates it, records it, secures it and reports it on a public ledger that can be queried by individual users to generate on-demand reports. *Starbuck's* could, for example, query it to report all *bitcoin* transactions for their accounts for the month of April 2022.

Further, the *Bitcoin* blockchain interacts with other information systems to form a business information system ecosystem. Since it is a digital currency, the value of a *bitcoin*, as measured in a fiat currency, is inherently volatile – which is potentially bad for both a customer and *Starbucks*. For a customer to pay a fixed price as listed on a menu, the customer's *Starbucks'* app sends an amount in a fiat currency to a third-party's information system for a real-time conversion to an amount of *bitcoin* at its current value. That amount of *bitcoin* is then sent to the user's *Bitcoin* wallet to create the *Bitcoin* transaction. This is possible because the data representing a transaction on the *Bitcoin* blockchain is stored in *JSON* format (*JavaScript Object Notation*), a standard, name-value pair format for moving data between disparate information systems. So, the *Bitcoin* blockchain meets the basic definition of an accounting information system – it processes transactions, stores and secures them and interacts with other information systems in order for it to operate in the business world.

Business Blockchain As an AIS

The *Bitcoin* blockchain can be used by anyone – it is permissionless, but it is limited to simple transactions representing an individual user spending *bitcoins* by sending them to another user on its peer-to-peer network. Business blockchains are different on both a conceptual level and a technology level. Conceptually, the *Bitcoin* blockchain exists to enable cryptocurrency transactions between any disparate parties, whereas business blockchains exist to enable collaboration in support of business objectives between trusted participants. While there are many examples of business blockchains, each with its own objectives, I will focus on *Tracr*, created by the *De Beers Group* (www.tracr.com).

Each participant is an invited entity on the blockchain, each interacts with the blockchain using a simple app, and each has an inherent interest in the authenticity and accuracy of the transactions it submits to the blockchain.

The stated objective of the *Tracr* blockchain is to "assure the provenance, traceability, and authenticity of natural diamonds." All entities in the natural diamonds industry are faced with the problem that their diamonds may have been mined in a country with a history of warlords using child and slave labor and ill-gotten gains to support war and genocide. Being able to prove to a potential customer that a diamond in a jewelry store is authentic, and not a "blood diamond," is inherently difficult and requires the collaboration of business entities from mine-to-retailer.

The *Tracr* blockchain is a collaborative platform on which business entities submit documents and interact to accomplish the objectives of provenance, traceability and authenticity. As with many information systems in business, the *Tracr* blockchain is a digital representation of the operation of a physical system. It operates as follows:

- A trusted, ethical mining operation is invited to join *Tracr*. The entity mines raw material, extracts a diamond and creates a diamond registration document, including the date, time, location and country of origin. It then creates a digital asset on the blockchain by posting the registration document to the *Tracr* blockchain.
- Next, the diamond is purchased by a manufacturer where it is cut, polished and graded for carat, color, clarity and cut, and is then "certified" – in the U.S. by the GIA (Gemological Institute of America). The certification documents, including, 3D scans and images, are added to the blockchain.
- Next, the diamond goes to a retailer where it is made into a piece of jewelry, documented, market-valued and purchased by a consumer. The retailer proves the authenticity of the diamond to the consumer based on its provenance as documented on the blockchain.

Business blockchains become a valuable part of an entity's business information ecosystem, driven in large part by its members' accounting information systems.

A Real-Life Example of the Process

Each participant is an invited entity on the blockchain, each interacts with the blockchain using a simple app, and each has an inherent interest in the authenticity and accuracy of the transactions it submits to the blockchain. Each entity also has its own proprietary information systems to support its internal operations. If fully implemented, each participant's blockchain app would be designed to submit data from an internal information system as a transaction on the blockchain. For example, when a manufacturer certifies a diamond, the documentation is entered in its proprietary information system, along with a value in a fiat currency, and the diamond becomes part of the manufacturer's inventory. Using its blockchain app, the manufacturer would interface with its internal asset management information system and use it as the data source to submit the agreed upon data to the *Tracr* blockchain. No matter what form the manufacturer stores its internal data in, it would be converted to *JSON* format and submitted as a transaction to the blockchain. All authorized participants would then have access to it.

This example is meant to illustrate the basics of how a blockchain in business can interface with an individual entity's internal accounting and other information systems. The business blockchain becomes an integral part of an entity's information system ecosystem, adding significant value to the entity and all of its blockchain partners. Depending on how both the blockchain and an entity's internal information systems are configured, there are multiple opportunities for interaction.

In the case of *Trackr*, the mining operation would have internal AISs to record the labor and other related expenses involved in mining the raw material and pricing the extracted raw diamonds in inventory. It would have other internal information systems to create, process and store the diamond registration data. The mining business would use a blockchain app to interface these internal information systems with the blockchain that would allow them to automatically submit the registration documentation and selected price data as transactions to the blockchain. The diamond manufacturer would have similar internal systems to record costs and track inventory, record certification data and create images. Each of these internal systems would be interfaced with the *Tracr* blockchain to automatically submit transactions with the required data to the blockchain. The same applies to the retailer. In all cases, a business entity's internal information systems, including its AISs, would interface with the blockchain to submit transactions containing the agreed-upon data. The effect is cumulative – as each participating business entity submits its data to the blockchain, the asset's value is enhanced, benefitting each individual entity and the blockchain consortium as a whole.

A business blockchain is a collaborative platform created to meet business objectives.

The value realized by each individual business entity depends on its location on the blockchain. Based on due diligence, a mining company is invited to join the *Tracr* blockchain. Each diamond that the company registers on the blockchain becomes an ethically-sourced diamond from a trusted mining operation. Such diamonds are more valuable and the company realizes the benefits of enhanced reputation and, potentially, higher sales volume and more profit. The manufacturer who purchases and then cuts and certifies the diamond is sure of its source and its authenticity. The diamond can be graded and priced accordingly, and the company potentially realizes reputational and profit benefits. Also, when the company needs to finance its inventory, it has documentation with which to back up its stated value, potentially gaining a lower interest rate. The retailer who purchases the diamond benefits from being able to document its authenticity and provenance and, thereby, prove its value to a customer. The retailer would also potentially realize reputational benefits and increased sales.

A business blockchain, such as *Trackr*, contains data submitted to it from its member's internal information systems, including their AISs. As such, the blockchain becomes a platform on which its members have access to shared data from the information systems of all of its members. All of the blockchain members collaborate to realize the otherwise difficult mutual benefits that accrue from being able to prove the provenance, traceability and authenticity of their natural diamonds. From this point of view, business blockchains become a valuable part of an entity's business information ecosystem, driven in large part by its members' accounting information systems.

A key point is that a blockchain can become a significant part of a business entity's information systems ecosystem. Though a blockchain is both conceptually and technically quite different from traditional business information systems, it can add significant value to an entity's information systems ecosystem. Each business blockchain is created to accomplish goals that are difficult to accomplish without the collaboration of others in a business entity's value chain. Based on these goals, agreed-upon data from traditional internal information systems is submitted in transactions to the business blockchain and shared with the members of the blockchain to help accomplish mutual goals and improve decision making. In addition, blockchains add other benefits not typically associated with traditional information systems, including transactions being verified based on an agreed-upon algorithm that is part of the blockchain transaction processing protocol and a diminished risk of loss of data because each trusted participant has their own copy of the blockchain.

Redefining an AIS

Traditional accounting information systems are characterized by transactions representing economic events related to an asset, valued in a fiat currency, with the corresponding data recorded in proprietary databases. If we expand the definition of a traditional AIS, the *Bitcoin* blockchain is an example of an enhanced, separate AIS because each transaction represents an economic event between two users on the blockchain involving a change of ownership of the number of *bitcoins* recorded on a public ledger. In addition, each transaction is signed with a private digital signature, validated by an independent user running a computationally complex algorithm, and secured by being added to a block and chained to previous blocks, forming an immutable chain of blocks of transactions.

A business blockchain, such as *Trackr*, on the other hand, is a collaborative platform created to meet business objectives. It is an enhanced accounting information system from the perspective that each transaction affects the value of an asset, it is submitted by a trusted participant and the data comes from the participant's internal AIS or other information system. A blockchain, either a stand-alone transaction processor or a collaborative business platform, can become a valuable part of a business entity's redesigned information systems ecosystem. It simply requires thinking more broadly about how we define an AIS.

Web 3.0: The Future of the World Wide Web, "Blockchain for Everything, Everywhere" or Blue Smoke and Mirrors?

By Eric E. Cohen, CPA

Eric E. Cohen, CPA, is a technologist with a passion for collaboration toward the goal that "a piece of business information, once entered into any system, anywhere, never needs to be retyped as it moved through the business reporting supply chain." H's also prolific author, engaged in virtually every effort to standardize accounting and audit data, a national expert to a wide variety of standards efforts, and co-founder of XBRL.

When you scan the technology and business press, a few terms have been rising in interest. One of them has exploded onto the scene, although its roots go back more than 15 years: Web3. *Time* magazine has introduced its Web3 community initiative, TIMEPieces,[1] and is selling access to issues as non-fungible tokens. "Rank and file" Web3 developers are reportedly being offered compensation of $300,000 US or more.[2] The *New York Times* has recently published its own guide on "What is web3?"[3]

But whether people don't see the need being met, confusion about what web3 is, or some other reasons, it seems like those directly involved don't care. According to Google Trends, a tool for tracking search volumes, "blockchain" has remained interesting buoyed on by Bitcoin in late 2017[4]; "NFT" (non-fungible tokens) exploded in interest in February 2021[5]; "Meta" took off in October 2021, led by Facebook's new Meta brand for its apps and technologies.[6] What hit the headlines, however, but not the search results is the focus of this article: *Web 3.0*, or *Web3*.

The evolutionary path of technologies having an impact on financial professionals is littered with trends and fads. Few were solutions designed to meet particular problems in the profession. Many failed, or at least stalled, as they were hyped before their time and may yet gain traction. Some were marketing terms rebranding what's already in place, but with new clothes. Some are signposts announcing possible destinations, where the actual path may or may not reach the destination as described. Which of these is Web 3.0? And how far back does the term go, and has its meaning changed?

The evolutionary path of technologies having an impact on financial professionals is littered with trends and fads.

In this article, I will delve into the background and distinctives of Web 3.0. At a very high level, it is a name for the visions of the natural evolution of the World Wide Web … given other technical advancements. Currently, that vision incorporates or focuses on blockchain technology as a foundation. Web3 is not yet in place; there is no official standards organization defining it or developing the architecture authoritatively; there is little agreement to what will bring us from "Web 2.0" to Web 3.0, but many try to plot the course.

Moving forward, we introduce the background of the term, illustrate how the market has grabbed and stretched it in different directions and speak about potential impacts on financial professionals.

The Genesis of Web 3.0

My involvement in the "World Wide Web" spans back almost 30 years. I developed my first web pages on a university Unix system using the *vi text* editor and looked at the pages using the Lynx web browser, a text-only tool. My own website, at my long-standing domain *Computercpa.com*, is little changed from the lovingly handcrafted site I first put up, first on that university computer and later under my own domain. I wrote the first article about the Internet (and the World Wide Web) for the *Journal of Accountancy* back in August 1995,[7] and published one of the first books about the topic for the profession, *The Accountant's Guide to the Internet*.

From those early days of static text-only pages, there have been many evolutionary stages of the Web. In those earliest days, chatting with fellow enthusiasts, I learned about the Mosaic browser, the precursor to today's Mozilla Firefox, which permitted display of images *inline* with the text. Other evolutionary changes included:

- Javascript and CSS (cascading style sheets), for a more dynamic and interactive web.
- Peer to peer file sharing.
- Mobile browsing.
- The social web, with blogs, social media.
- Multimedia sites, like YouTube, aided by broadband connections.

So, there is little agreement on when "Web 2.0" emerged, although some people say the change was from the "read only" Web to the "read write" Web, or the change to centralized sites (social media) and engaging users to contribute content, such as images, videos and personal information, with the information (intellectual property) grab that came with it. One might say the leaders of Web 2.0 are sites like Facebook, LinkedIn, YouTube, TikTok, Instagram, Snapchat and others of that ilk.

As a reaction to the rise of these new powerhouses, Web 3.0 was introduced. Well, one could posit that Web 3.0 has been introduced a number of different times. In 2006, there is reference in *The New York Times* from reporter John Markoff, appearing also in *IEEE Internet Computing* in May/June 2007 as a return to common sense, based on Semantic Web technologies, leading to a "machine-facilitated understanding of information in order to provide a more productive and intuitive user experience," and focused on the so-called *Semantic Web.*[8] We in XBRL circles had many discussions about XBRL and the Semantic Web in the immediate years that followed.[9]

How much of Markoff's vision has carried over into today's blockchain-focused Web3 is up for argument. As we will see, the blockchain-era Web 3.0 is often credited to Ethereum/Polkadot pioneer, Dr. Gavin Wood, in 2014. While Wood's vision was originally aimed at a decentralized web, we will see even that vision has been pulled into a number of different directions.

We are still working off of the risks related to taking mission-critical activities and moving them away from our direct control.

There is, fittingly, a group known as the "web3 foundation," which brings visibility to this space, and wjocj funds research and supports development teams building the foundation of the "decentralized web." Dr. Wood is the Founder of the web3 foundation. His "Web 3.0" vision was expressed in a post called "DApps: What Web 3.0 Looks Like". The four major components of the vision were focused on *more control over personal information*, using:

- Static content publication
- Dynamic messages
- Trustless transactions and,
- Integrated user-interface.

This interview in Bitcoin Magazine in 2014 is also helpful for understanding Wood's original vision, freeing users from having their email and pictures and identifiers and movements and social media content from being conscripted by Facebook, Google, Twitter (not my list, his) and other large organizations and governments. He also revolutionized the model for interactions between parties into a "decentralized, encrypted information publication system" where we own and control our information using a zero-trust interaction system: a "Secure Social Operating System."

This move from centralized cloud systems to decentralized systems is interesting; it seems we just moved from systems we owned and controlled ourselves to centralized cloud systems, and we are still working off of the risks related to taking mission-critical activities and moving them away from our direct control. Shortly before I left PwC, we were making a difficult transition from Lotus Notes to the Google Suite. Certainly, all of the "i"s were dotted and the "t"s crossed, but our correspondence, spreadsheets and documents moved from our control to a third party, "centralized," service (Google) on our behalf. Speaking to my own business, known as Cohen Computer Consulting, while my own business email is conducted separate from Amazon, Google or Facebook, much of my personal life is on their services; sometimes it seems like it is being used at my expense, or at least being held captive. Would some kind of a decentralized, secure social operating system help me?

Where Has the Web 3.0 Story Gone?

In the eight years since Wood's vision was first proposed, and 16 years since Markoff's, there has been a lot of re-use of the term Web 3.0 or Web3, but not always to the same end. The very companies Wood warned about have now said they are going to be Web 3.0 organizations, and Twitter founder Jack Dorsey posted:

> "You don't own 'web3'. The VCs [EEC: venture capitalists] and their LPs [EEC: limited partners] do. It will never escape their incentives. It's ultimately a centralized entity with a different label. Know what you're getting into…".[10]

So, it is unclear if the technology and the development is being used for a safe, social operation system or a new next general commercial grab with new potential enticements for the users. It may be much as Bitcoin changed from a "peer-to-peer payment" mechanism designed to disintermediate financial organizations to an investment asset highly reliant on intermediaries like Coinbase, Binance or Gemini.

While there is broad agreement that Web 3.0 is the evolution of the current Web to one that is using "decentralized" technology in some way, with potential benefits (and less obvious pitfalls) driven by the cryptographic privacy and confidentiality, open and of greater utility, with blockchain and sovereign self-identity as foundations, the vision is currently being driven by parallel concepts such as the *metaverse,* driven by non-fungible tokens, and encompassing both meta and physical space with the so-called "Spatial Web", also involving self-execution/autonomous activity and intelligence leveraging Artificial Intelligence (the read-write-execute Web).

Much as the concept of Web 3.0 has come in waves and differing focuses, one may say the metaverse[11] has experienced similar waves. We can look at a series of technologies as contributors, including virtual reality, augmented reality, digital economies, identities and personas, means of communication, inventories and storage, and related tools. We can look at the massively multiplayer online role-playing games, such as World of Warcraft (2004), or virtual worlds like Second Life (2003), as individual platforms with currencies, identities, places to go, people to see. At its heyday, major businesses like IBM,[12] accounting and tax firms and others worked to establish their presence in Second Life, and shortly after began to abandon it.[13]

While proponents speak about the joys of working in the metaverse to come, where virtual currencies, sovereign and protected identities, interaction with others from anywhere, protected intellectual property, and other potential benefits may exist if we can develop our way toward achieving them, the reality has not started to coalesce. It is a challenge when we don't have distinct business requirements being solved and Web 2.0 only provides a slight preview. As Mark Zuckerberg (founder of Facebook) notes,

"A lot of the magic But I think a lot of the magic of NFTs and a lot of the Web 3.0 work is that it's designed in a way to be fundamentally interoperable. So, I think that that's going to be really important because it will help break down the silos between different apps and make it so that all your stuff can be more portable between these different experiences."[14]

What Is the Impact on The Financial Professional?

As Web 3.0 is ambiguous in vision and not really instantiated, it is difficult to say with authority what the impact is on financial professionals. We can look at the change from the PC era to the Web era: how our reference materials move from three ring binders to online access, how our software moved from the PC to the cloud, how new services from WebTrust to SOC engagements arose. The pandemic has been the catalyst for a major movement from in-person to virtual services. It has been 35 years since IBM ran its humorous commercials on how Lotus Notes would "save users lives" and get rid of the need to travel in order to do business. Will virtual worlds change things?

In IBM's ad, called Boondoggle," first shown in January 1998, prolific actor Paul Ben-Victor played a well-travelled business person, who had been to "52 countries in two years," met Fatima ("big star!"), had his picture taken with an obscure prime minister ("Prime Minister Some … Something"), and had pictures and knick-knacks to commemorate his travels. His young IT colleague, however, had just installed something that "is going to save [his] life," called Lotus Notes. He'll "never have to leave the office" again. No more free vacations on the company's dime.

Web 3.0 is a fragmented vision, highly aspirational and offers promises to solutions that have eluded us for 30 years.

While Zoom has shown we are all more disposed to doing everything from running the government[15] to holding conferences to meeting with clients, it has had its problems as well. In standard setting, for good or the bad, more agreement took place during off-hours with adult beverages than in the plenaries.

It is not yet clear where financial professionals have been active in virtual worlds and are seeking an interoperability solution. It is also not yet clear where components of the Web3 technical stack are in use but require a holistic solution rather than bridges in specific areas.

Security issues loom. From a security aspect, I have been working for more than 20 years on how digital signatures, encryptions and private keys work together at individual, role-based, and organizational-based levels for authorization and authentication. Likewise, data standardization – or the "Semantic Web," which some say is a foundation to Web 3.0 – has been sporadic in development and take up.

It is not yet clear where components of the Web3 technical stack are in use but require a holistic solution rather than bridges in specific areas.

The vision of greater control of information, with greater reliability of that information, and automation of its processing can lead to new operational, business and accounting systems, and new methods of interactions between businesses, governments and individuals. The potential merging of physical and digital objects and space can mean completely new business models and new methods of tracking and control.

The flip side is the potential introduction of new risks. We are already seeing challenges with securities laws (related to crypto tokens in particular), money laundering, sanctions avoidance, challenges with developing internal controls (let alone when the walls between organizations blur and the line between internal and external becomes difficult to see), and the need for new types of third party service organization controls and assurance, when the services are decentralized and there is no centralized management to make assertions and hire auditors.

Web 3.0 is a fragmented vision, highly aspirational and offers promises to solutions that have eluded us for 30 years. People speak as if Web 3.0, the metaverse and blockchain technologies (in particular, non-fungible tokens) are the same thing. Web 3.0 may be the vision of interoperability of web services; in a prior issue of *ThinkTwenty20*, my interoperability maturity model for blockchain is very compatible with that vision. For others, it's just a way for people to better control their own data and move from social media to shopping to business activities using a single, personalized account that exposes only the necessary information both parties agree is necessary.

It is clear that VCs are throwing money at Web 3 and that the very companies Web 3.0 enthusiasts are concerned about are not going to bow out quietly. This means there are new opportunities for service, new risks to consider, new potential benefits to consider. The financial community can, however, work together to craft the vision of the future for the Web and encourage development in those areas.

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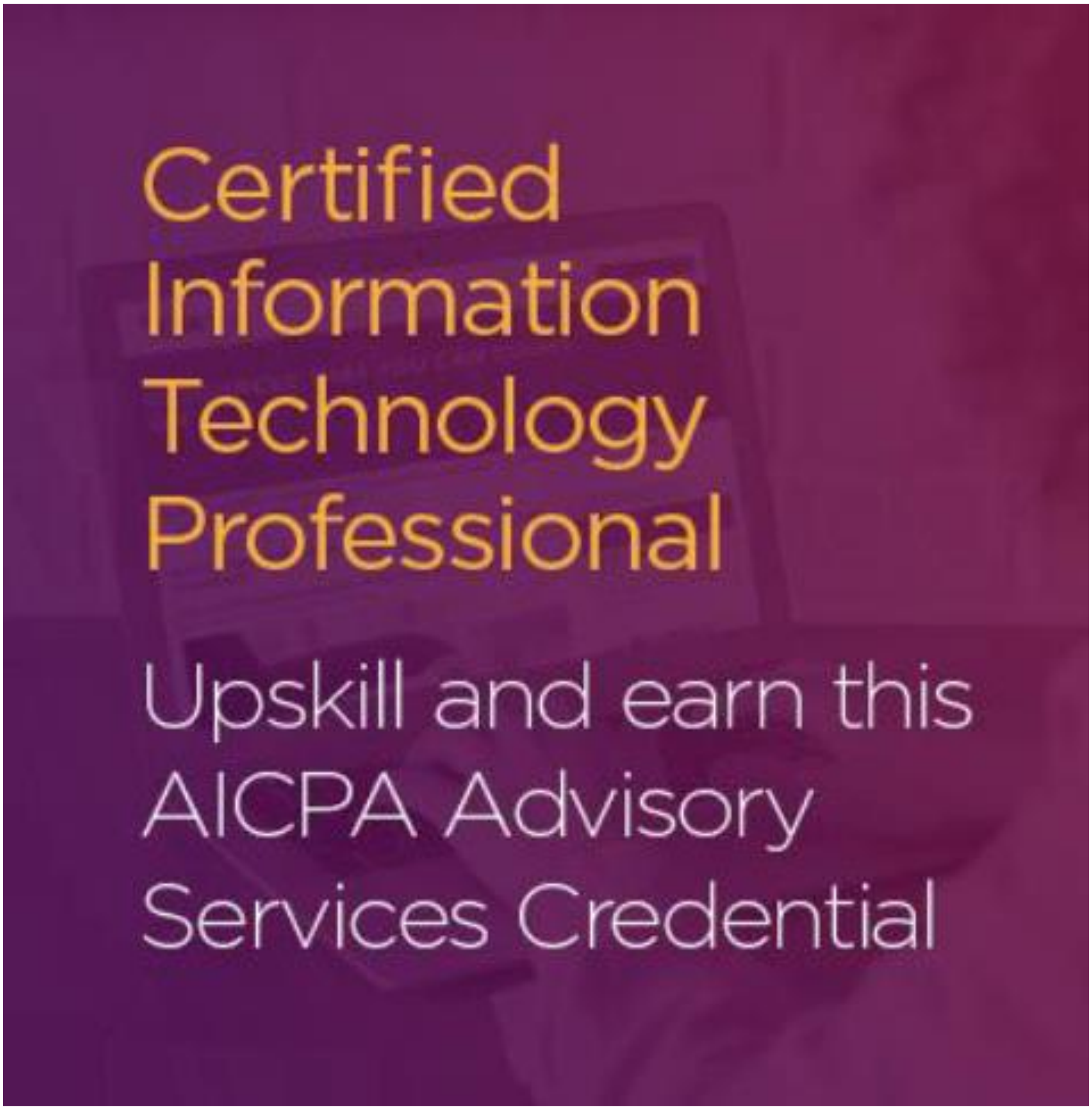
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Twenty-First Century Corporate Reporting:

Effective Use of Technology and the Internet

How and why do corporations use the internet for reporting to their stakeholders? How and why has corporate reporting extended beyond financial reporting to include environmental, social, and governance (ESG) reporting and even integrated reporting. The major drivers of modern reporting have changed, to include data driven decision making, big data, and advanced analytics, as well as the use of electronic representations of data with tools such as XBRL.

Here we explore the various vehicles for using the internet, including social media and blogs as well as corporate websites and the websites of regulators. And we delve into the impact of portable devices, like smartphones and tablets.

Corporate reporting on the internet is changing fast because of changes in technology and stakeholder expectations. Companies are having a hard time keeping up. This book offers a roadmap to follow–a roadmap to start on now. Most importantly, the book lays out a strong case for integrated reporting and shows how reporting on the internet is ideally suited to the creation of integrated reports.

This book is of interest to executives in charge of the reporting function for their companies, students of accounting and management, and to serious investors and others with a strong interest in corporate reporting and the direction in which it is headed.

Gerald Trites is a CPA with a history of writing and publishing and a unique background. He was a partner in KPMG for seventeen years, and a tenured professor of accounting and information systems for ten. He also served for twelve years as director of XBRL Canada. He has published twelve books and numerous articles and papers. He worked as a research associate for the Canadian Institute of Chartered Accountants and served as chair of the Auditing Standards Board. He currently serves as editor-in-chief of ThinkTWENTY20 magazine, a publication he started in 2019 with the objective of publishing well-researched articles of substance.

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